



*The petite "bedroom set," so called, is probably the best known of the experimental models.*

### ***Wedding science and wants***

THIS WE CAN ACCOMPLISH only by wedding science and wants. It has been said that "necessity is the mother of invention." And I like to think of science as the father, and of the services and instrumentalities as the offspring of the mating. Our job is to ensure that what people want and what science says is possible are wedded in the best possible way.

In actual practice, the wedding process works about as follows:

The Bell Laboratories are continually working on scientific things, and they and we together are continually working on practical applications of these advances in science.

From many parts of the operating com-

panies, from outside sources, from the Laboratories and ourselves — from any and all sources — come ideas as to what people might want.

All of this is synthesized into a series of projects. Some projects may arise primarily from advances in science; some from ideas as to what people might want; some from a combination of the two.

These projects are divided into three classes, and the Laboratories and we work on each class in a different way.

1. Some projects are so definitely going to result in better service or involve such basic scientific advances that there is no need to put them in the model shop; they proceed along the normal path through research, fundamental development, and development for production.
2. Some projects are purely of the "model shop" variety; i.e., we know how to make them — at least well enough for testing in the market place — and what we have to find out is whether they will, in fact, be "attractive."
3. Some projects involve fundamental scientific advances, but parts of them may be segregated and "model shopped," to find out what features people will want.

If a product of the model shop successfully runs the gauntlet of testing in the market place, it then goes back into the main stream of development and the design is refined for regular production.

We can divide the whole field in which this process operates into two parts: telephones, and everything else.

### ***Telephones***

A VERY LARGE PART of the business of the Bell System is telephony. For this reason, telephones and the wiring and other gear associated with them on customers prem-



*How about a hand set with self-contained dial?*

ises get a lot of attention in the Division.

Everybody knows what a telephone is, and has ideas about it. What we are trying to do is to synthesize these ideas into broad concepts and work out answers to the questions they raise.

For example, should the dial and the ringer and the other functions of the telephone continue to be in one box with a handset tied on, or would some other ar-

rangment be better? The bedroom set is about as small as we can make a one-box design. But is this the way people want it, or would they rather have the dial on the handset, and maybe ringers somewhere else, and thus permit even more freedom in choice of forms and arrangements?

Another question which must be answered is whether people basically would

like to talk without holding anything in their hands, with the handset (or something equivalent) relegated to a subsidiary position, or would they like to continue to use the handset as the primary method? And it is very important that we find out which method people want, because the answer will critically affect the whole future of telephone development.

For both hands-free and handset types of telephones, we know (or at least we think we know) that people would like different styles, sizes, and arrangements for different rooms in a house, or in different offices, or in different other locations. And there are basically two ways to go about providing the wide range of instrumentalities this would call for:

1. Develop a much wider range of telephones of different designs.
2. Develop a line of basic "building blocks" which can be assembled in numerous forms and arrangements and a method of providing attractive "covers" for these different arrangements.

The first method would obviously result in a great proliferation of basic types, and would result in very complex manufacturing, distribution, stocking, and inventory problems, which actually might bog us down. So, while it will require a great deal more ingenuity, we have elected to follow the second road, and we and the Laboratories are now scratching our heads to come up with ideas on the building



*A modular console with 18 push-buttons*



*An application of the "building block" concept: a desk drawer installation*

blocks we will need, how we can put them together, and how we can produce a line of "covers" which will be attractive and easy to apply.

And, this greater-used and wider variety of telephones in homes and businesses brings with it new requirements for signaling and switching on customers' premises. In this field, again we are working along the lines of providing basic building blocks and packages which can be put together in a wide variety of manners to meet a wide variety of customers' wishes.

With all of this, we must learn how we can do a better job of wiring houses and offices and other places so as to provide greater capacity for growth and more

flexibility for changes. This job is so complex and important that we have set up a separate "project" to deal with it. This work has many phases; it not only encompasses cabling and jack-and-plug arrangements to facilitate installation and subsequent changes, but also affects and is affected by such things as how much of the customer switching should be done at the keys in key telephones and how much in out-of-sight cabinets; what is the best method of "packaging" of customer switching arrangements; and many other things.

### ***Other fields***

UP TO COMPARATIVELY RECENT TIMES, communication has been almost exclusively